PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	Docket No: Q89222
Kei TERADA, et al.	
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For: SERVO CONTROLLER	

ARTICLE 34 AMENDMENTS

AMENDMENT

(Amendment under Art. 11)

To: Commissioner, Patent Office

(To: Mr. FUJIMOTO Nobuo, Examiner in Patent Office)

1. Identification of the International Application

PCT/JP03/04642

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4. Date of Amendment Directive

24th of December, 2003

5. Scope of Amendments

Claims

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6. Contents of Amendments

(1) In claim 1, processing of a position feedback correction unit is made clear, and phrases of a velocity feedback correction unit, a model torque calculation unit, and an accumulator are deleted, and claim 1 is amended according to the attached document.

(2) In claim 2, "the between-axes positional deviation, filtered and gained, ... , is used to correct the position feedback signal" in lines 1 through 4 on page 41 is amended into "the gain applied to the between-axes positional deviation ... is set at a negative value during operational stops, and is set at a positive value during operational runs".

(3) In claim 3, the whole sentence is deleted, and amended by being replaced with a new sentence according to the attached document.

(4) In claim 4, the whole sentence is deleted, and amended by being replaced with a new sentence according to the attached document.

(5) In claim 5, the whole sentence is deleted, and amended by being replaced with a new sentence according to the attached document.

(6) In claim 6, "a model position and a model acceleration" in line 23 on page 41 is amended into "a model position and a model acceleration for simulating an ideal movement for a machine".

(7) In claim 7, "a model position, a model velocity, and a model acceleration" in lines 13 and 14 on page 42 is amended into "a model position, a model velocity, and a model acceleration, for simulating an ideal movement for the machine".

(8) In claim 10, "a model position and a model acceleration" in line 6 on page 43 is amended into "a model position and a model acceleration

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for simulating an ideal movement for a machine".

(9) In claim 11, "a model position, a model velocity, and a model acceleration" in lines 5 and 6 on page 44 is amended into "a model position, a model velocity, and a model acceleration, for simulating an ideal movement for the machine".

7. List of attached documents

Claims in pages 40, 41, 41/1, 42, 42/1, 43, 43/1, and 44 of the specification.

CLAIMS

What is claimed is:

1. (Amended) A servo controller comprising:

a position feedback correction unit for correcting a position feedback signal by adding a between axes positional deviation, filtered and gained, that is the difference between a self-axis position and an other-axis position, to the gained self-axis position;

a position control unit for performing, according to a corrected position feedback signal outputted from the position feedback correction unit, positional control to output a velocity command; and

a velocity control unit for outputting a feedback torque command based on the velocity command outputted from the position control unit, and on the self-axis velocity.

2. (Amended) A servo controller according to claim 1, wherein, in the position

feedback correction unit, the gain applied to the between-axes positional deviation that is the difference between the self-axis position and the other-axis position is set at a negative value during operational stops, and is set at a positive value during operational runs.

3. (Amended) A servo controller according to claim 1 or claim 2, further comprising a velocity feedback correction unit for correcting a velocity feedback signal by adding a between-axes velocity deviation, filtered and gained, that is the difference between the self-axis velocity and the other-axis velocity, to the gained self-axis velocity;

wherein the velocity control unit outputs a feedback torque command based on the velocity command outputted from the position control unit, and on a corrected velocity feedback signal outputted from the velocity feedback correction unit.

4. (Amended) A servo controller comprising:

a position feedback correction unit for correcting a position feedback signal by adding a self-axis position filtered through a high-pass filter and an other-axis position filtered through a low-pass filter;

a position control unit for performing, according to a corrected position feedback signal outputted from the position feedback correction unit, positional control to output a velocity command; and

a velocity control unit for outputting a feedback torque command based on the velocity command outputted from the position control unit, and on the self-axis velocity.

5. (Amended) A servo controller according to claim 4, further comprising a velocity feedback correction unit for correcting a velocity feedback signal by adding a self-axis velocity filtered through a high-pass filter and an other-axis velocity filtered through a low-pass filter;

wherein the velocity control unit corrects the velocity feedback signal based on the velocity command outputted from the position control unit, and on a corrected velocity feedback signal outputted from the velocity feedback correction unit.

6. (Amended) A servo controller comprising:

a reference model control unit for calculating, based on a position command, a model position and a model acceleration for simulating an ideal movement for a machine;

a position control unit for performing, according to the difference between the model position and a self-axis position,

positional control to output a velocity command;

a velocity control unit for outputting a feedback torque command based on the velocity command outputted from the position control unit, and on the self-axis velocity;

a model torque calculation unit for correcting, according to the self-axis position and an other-axis position, the model acceleration to calculate a model torque; and

an accumulator for calculating a torque command based on the model torque and the feedback torque command.

7. (Amended) A servo controller according to claim 6, wherein:

the reference model control unit is configured so as to calculate, based on the position command, a model position, a model velocity, and a model acceleration, for simulating an ideal movement for the machine; and

the velocity control unit outputs the feedback torque command based on the velocity command outputted from the position control unit, on the model velocity, and on the self-axis velocity.

8. A servo controller according to claim 6 or claim 7, wherein, in the model torque correction unit, in accordance with time or with a waveform of the velocity command, the correction unit's correction operation is started and stopped, or correction gains are changed.

9. A servo controller according to any of claims 6-8, wherein, in the

model torque correction unit, polarity is inverted using the sign of the

inputted model acceleration having been filtered through a high-pass filter.

10. (Amended) A servo controller comprising:

a reference model control unit for calculating, based on a position command, a model position and a model acceleration for simulating an ideal movement for a machine;

a position feedback correction unit for correcting a position feedback signal based on a self-axis position and an other-axis position;

a position control unit for performing, according to the difference between the model position and a corrected position feedback signal outputted from the position feedback correction unit, positional control to output a velocity command;

a velocity feedback correction unit for correcting a velocity feedback signal based on the self-axis velocity and the other-axis velocity;

a velocity control unit for outputting a feedback torque command based on the velocity command outputted from the position control unit, and on a corrected velocity feedback signal outputted from the velocity feedback correction unit;

a model torque calculation unit for correcting, according to an other-axis model acceleration, to the self-axis position, and to the other-axis position, the model acceleration, to calculate a model torque; and

an accumulator for calculating a torque command based on

the model torque and the feedback torque command.

11. (Amended) A servo controller according to claim 10, wherein:

the reference model control unit is configured so as to calculate, based on the position command, a model position, a model velocity, and a model acceleration, for simulating an ideal movement for the machine; and

the velocity control unit outputs the feedback torque command based on the velocity command outputted from the position control unit, on the model velocity, and on the corrected velocity feedback signal outputted from the velocity feedback correction unit.